1. Consider the following four processes with the length of the CPU Burst given in milliseconds.

Processes Arrival Time Burst Time

P1 0 8

P2 1 4

P3 2 9

P4 3 5

What will be the average waiting time using Shortest Job First scheduling algorithm?

a) 6

b) 6.5

c) 7

d) 5.5

2. Virtual memory is?

a) Extremely large main memory

b) Extremely large secondary memory

c) An illusion of an extremely large memory

d) A type of memory used in super computers

3. If the disk head is located initially initiated at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are:

98, 37, 14,124, 65, 67

a) 239

b) 310

c) 321

d) 325

4. Part of a programme where the share memory is accessed and which should be executed indivisibly, is called

a) Semaphores

b) Directory

c) Critical section

d) Mutual exclusion

5. Page fault occurs when?

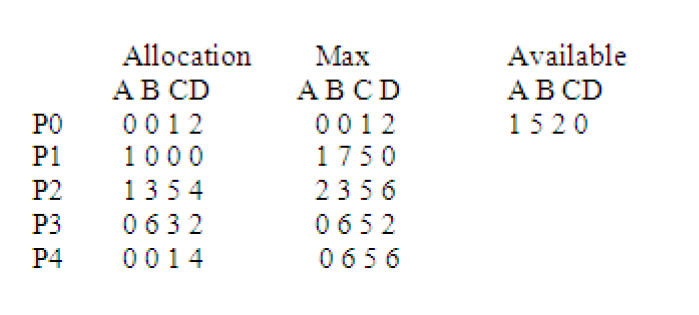
a) The page in corrupted by application software

b) The page is in main memory always

c) The page is not in main memory when there is the demand

d) One tries to divide number by 0

6. Consider the following Snapshot at time T0:



Which of the following sequence is in safe state using Banker’s algorithm?

a) P1, P3, P4, P2, P0

b) P0, P2, P1, P4, P3

c) P0, P2, P4, P1,P3 d) P4, P3, P1, P2, P0

7. The kernel supports

a) File system, processor scheduling, memory management and other OS functions through system calls

b) File system only

c) Processor scheduling only

d) None

8. The PID of the kernel process is

a) undefined

b) 0

c) 1

d) 3

9. A process may include -------------------, which is memory that is dynamically allocated during process runtime.

a) Stack

b) Heap

c) Virtual memory

d) Register

10 ) \_\_\_\_\_\_\_\_\_\_\_ is a technique of improving the priority of process waiting in Queue

for CPU allocation

a) Starvation

b) Ageing

c) Revocation

d) Relocation

11. A thread is a light weight process. In the above statement , weight refers to

a) time

b) no of resources

c) speed

d) all of the above

12. Which of the following is a necessary condition of deadlock?

a) Mutual exclusion

b) No pre-emption

c) Hold and wait

d) All of the above

13. A bootstrap is?

a) Hardware of computer used to check memory

b) A program to start up a computer

c) Memory device

d) An Assembler

14. What is thrashing?

a) A high paging activity is called thrashing

b) A high executing activity is called thrashing

c) An extremely long process is called thrashing

d) An extremely long virtual memory is called thrashing

15. Belady's Anomaly is a behavior of which page replacement algorithm ?

a) FIFO

b) Optimal

c) Circular FIFO

d) LRU

16. Multiprogramming systems:

a) Are easier to develop than single programming systems

b) Execute each job faster

c) Execute more jobs in the same time period

d) Are used only one large mainframe computers.

17. \_\_\_\_\_\_\_\_\_\_\_ is a technique of temporarily removing inactive programs from the memory of computer system

a) Swapping

b) Spooling

c) Semaphore

d) Scheduler

18. Process is

a) program in High level language kept on disk

b) contents of main memory

c) a program in execution

d) a job in secondary memory

19. The initial value of the semaphore that allows only one of the many processes to enter their critical sections, is

a) 8

b) 1

c) 16

d) 0

20. Producer consumer problem can be solved using

a) semaphores

b) event counters

c) monitors

d) all of the above

21. Which of the following statements is false? a) Virtual memory implements the translation of a program’s address space into physical memory address space  
b) Virtual memory allows each program to exceed the size of the primary memory  
c) Virtual memory increases the degree of multiprogramming  
d) Virtual memory reduces the context switching overhead

22. Consider a set of n tasks with known runtimes r1, r2, … rn to be run on a uniprocessor machine. Which of the following processor scheduling algorithms will result in the maximum throughput?

(a) Round-Robin  
(b) Shortest-Job-First  
(c) Highest-Response-Ratio-Next  
(d) First-Come-First-Served

23. Suppose the time to service a page fault is on the average 10 milliseconds, while a memory access takes 1 microsecond. Then a 99.99% hit ratio results in average memory access time of   
(a) 1.9999 milliseconds  
(b) 1 millisecond  
(c) 9.999 microseconds  
(d) 1.9999 microseconds

24. Which of the following need not necessarily be saved on a context switch between processes?   
(a) General purpose registers  
(b) Translation look-aside buffer  
(c) Program counter  
(d) All of the above

**25. Where does the swap space reside?**

(a) RAM  
(b) Disk  
(c) ROM  
(d) On-chip cache

**26. Which of the following does not interrupt a running process?**

(a) A device  
(b) Timer  
(c) Scheduler process  
(d) Power failure

**27. Which of the following scheduling algorithms is non-preemptive?**   
a) Round Robin  
b) First-In First-Out  
c) Multilevel Queue Scheduling  
d) Multilevel Queue Scheduling with Feedback

**28. Using a larger block size in a fixed block size file system leads to**   
a) better disk throughput but poorer disk space utilization  
b) better disk throughput and better disk space utilization  
c) poorer disk throughput but better disk space utilization  
d) poorer disk throughput and poorer disk space utilization

**29. Consider the following statements with respect to user-level threads and kernel supported threads**  
**i. context switch is faster with kernel-supported threads**  
**ii. for user-level threads, a system call can block the entire process**  
**iii. Kernel supported threads can be scheduled independently**  
**iv. User level threads are transparent to the kernel**

**Which of the above statements are true?**   
a) (ii), (iii) and (iv) only  
b) (ii) and (iii) only  
c) (i) and (iii) only  
d) (i) and (ii) only

**30. The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by**

a) the instruction set architecture  
b) page size  
c) physical memory size  
d) number of processes in memory

**31. In a system with 32 bit virtual addresses and 1 KB page size, use of one-level page tables for virtual to physical address translation is not practical because of**

a) the large amount of internal fragmentation  
b) the large amount of external fragmentation  
c) the large memory overhead in maintaining page tables  
d) the large computation overhead in the translation process

**32. A process executes the code**

fork ();

fork ();

fork ();

**The total number of child processes created is**  
(A) 3  
(B) 4  
(C) 7  
(D) 8

**33. consider the 3 processes, P1, P2 and P3 shown in the table**

Process Arrival time Time unit required

P1 0 5

P2 1 7

P3 3 4

**The completion order of the 3 processes under the policies FCFS and RRS (round robin scheduling with CPU quantum of 2-time units) are**

(A) **FCFS**: P1, P2, P3 **RR2**: P1, P2, P3  
(B) **FCFS**: P1, P3, P2 **RR2**: P1, P3, P2  
(C) **FCFS**: P1, P2, P3 **RR2**: P1, P3, P2  
(D) **FCFS**: P1, P3, P2 **RR2**: P1, P2, P3

**34. Consider the virtual page reference string**  
**1, 2, 3, 2, 4, 1, 3, 2, 4, 1**  
**On a demand paged virtual memory system running on a computer system that main memory size of 3 pages frames which are initially empty.**

**Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacements policy. Then**  
(A) OPTIMAL < LRU < FIFO

(B) OPTIMAL < FIFO < LRU

(C) OPTIMAL = LRU

(D) OPTIMAL = FIFO

**35. A virtual memory system uses First In First Out (FIFO) page replacement policy and allocates a fixed number of frames to a process. Consider the following statements:**  
**P: Increasing the number of page frames allocated to a process sometimes increases the page fault rate.**  
**Q: Some programs do not exhibit locality of reference. Which one of the following is TRUE?**  
(A) Both P and Q are true, and Q is the reason for P  
(B) Both P and Q are true, but Q is not the reason for P.  
(C) P is false, but Q is true  
(D) Both P and Q are false.

**36. A single processor system has three resource types X, Y and Z, which are shared by three processes. There are 5 units of each resource type. Consider the following scenario, where the column alloc denotes the number of units of each resource type allocated to each process, and the column request denotes the number of units of each resource type requested by a process in order to complete execution. Which of these processes will finish LAST?**

alloc request

X Y Z X Y Z

P0 1 2 1 1 0 3

P1 2 0 1 0 1 2

P2 2 2 1 1 2 0

(A) P0  
(B) P1  
(C) P2  
(D) None of the above, since the system is in a deadlock

**37. Consider the following statements about user level threads and kernel level threads. Which one of the following statement is FALSE?**  
(A) Context switch time is longer for kernel level threads than for user level threads.  
(B) User level threads do not need any hardware support.  
(C) Related kernel level threads can be scheduled on different processors in a multi-processor system.  
(D) Blocking one kernel level thread blocks all related threads.

**38. Consider three CPU-intensive processes** P0, P1 and P2**, which require 10, 20 and 30 time units and arrive at times 0, 2 and 6, respectively. How many context switches are needed if the operating system implements a shortest remaining time first scheduling algorithm? Do not count the context switches at time zero and at the end.**  
(A) 1  
(B) 2  
(C) 3  
(D) 4

**39. A computer system supports 32-bit virtual addresses as well as 32-bit physical addresses. Since the virtual address space is of the same size as the physical address space, the operating system designers decide to get rid of the virtual memory entirely. Which one of the following is true?**  
(A) Efficient implementation of multi-user support is no longer possible  
(B) The processor cache organization can be made more efficient now  
(C) Hardware support for memory management is no longer needed  
(D) CPU scheduling can be made more efficient now

40. Which of the following option is true?

(A) The implementation may not work if context switching is disabled in P.

(B) Instead of using fetch-and-set, a pair of normal load/store can be used

(C) The implementation of V is wrong

(D) The code does not implement a binary semaphore

41.Which of the following statements are true?

I. Shortest remaining time first scheduling may cause starvation

II. Preemptive scheduling may cause starvation

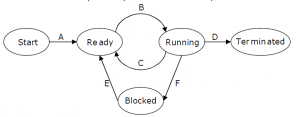
III. Round robin is better than FCFS in terms of response time

1. I only  
   (B) I and III only  
   (C) II and III only  
   (D) I, II and III

42. The maximum number of processes that can be in Ready state for a computer system with n CPUs is

(A) n  
(B) n2  
(C) 2n  
(D) Independent of n

43. In the following process state transition diagram for a uniprocessor system, assume that there are always some processes in the ready state: Now consider the following statements:

[](https://media.geeksforgeeks.org/wp-content/cdn-uploads/gq/2014/01/gate2009.png)

I. If a process makes a transition D, it would result in

another process making transition A immediately.

II. A process P2 in blocked state can make transition E

while another process P1 is in running state.

III. The OS uses preemptive scheduling.

IV. The OS uses non-preemptive scheduling.

Which of the above statements are TRUE?

1. I and II  
   (B) I and III  
   (C) II and III  
   (D) II and IV

44. The correct matching for the following pairs is

(A) Disk Scheduling (1) Round robin

(B) Batch Processing (2) SCAN

(C) Time sharing (3) LIFO

(D) Interrupt processing (4) FIFO

Codes:

A B C D

a 3 4 2 1

b 4 3 2 1

c 2 4 1 3

d 3 4 3 2

1. a  
   (B) b  
   (C) c  
   (D) d

45. When an interrupt occurs, an operating system

(A) ignores the interrupt

(B) always changes state of interrupted process to ‘blocked’ and schedules another process

(C) always resumes execution of interrupted process after processing the interrupt

(D) may change the state of interrupted process to ‘blocked’and schedule another process

46. Which module gives control of the CPU to the process selected by the short – term schedular ?

(A) Dispatcher  
(B) Interrupt  
(C) Schedular  
(D) Threading

47. Which of the following statement is true?  
(A) Hard real time OS has less jitter than soft real time OS  
(B) Hard real time OS has more jitter than soft real time OS  
(C) Hard real time OS has equal jitter as soft real time OS  
(D) None of the above

48. Which of the following is not an optimization criterion in the design of a CPU scheduling algorithm?  
(A) Minimum CPU utilization  
(B) Maximum throughput  
(C) Minimum turnaround time  
(D) Minimum waiting time

49. Which of the following statements is not true for Multi-Level Feedback Queue processor scheduling algorithm?  
(A) Queues have different priorities  
(B) Each queue may have different scheduling algorithm  
(C) Processes are permanently assigned to a queue  
(D) This algorithm can be configured to match a specific system under design  
  
50. In which of the following scheduling criteria, context switching will never take place?  
(A) ROUND ROBIN  
(B) Preemptive SJF  
(C) Non-preemptive SJF  
(D) Preemptive priority

51. The minimum number of links for any directory file are

a. 3

b. 4

c. 1

d. 2

52. Shell Program is stored in a file called

a. Unix

b. Sh

c. Dd

d. Cc

53. The default value of Umask is

a. 1024

b. 4021

c. 0022

d. 1001

54. Binary executable required for system administration is usually placed in \_\_\_\_\_\_\_\_ directory.

a. Letc

b. Lusr

c. ldev

d. none

55. All user directories are usually placed in \_\_\_\_\_\_\_\_\_ directory.

a. Letc

b. lusr

c. ldev

d. none

56. If there are three links for a file then the number of copies of the file would be:

a. One

b. two

c. three

d. four

57. After typing the contents of file test created by you by giving the command cat>test , you save the contents by

a. Pressing the keys ctrl-c

b. Typing save and pressing enter

c. Pressing Esc key

d. Pressing ctrl-d

58. The file for which we do not have write permission can be deleted using the command

a. rm-i file

b. rm-I file

c. rm-r-file

d. rm-f-file

59. The permission 746 can be represented as

a. rwxrwx- -x

b. rw- -w-r-x

c. rwxr-xr-x

d. rwxr- -rw–

60. A Sticky bit applies to a file would mean that

a. No one can remove it

b. It would stick around in memory even when its execution is over

c. Next time you login it would get executed on its own

d. None of the above

61. The command pwd gives

a. Present working directory

b. Password in encrypted form

c. Password in decrypted form

d. None

62. Which of the following is not a unix command

a. Cd

b. rm

c. pwd

d. del

63. The size of any block in the Unix file system is

a. 512 bytes

b.1024 bytes

c. 2048 bytes

d. Any of the above

64. Which file gets executed when we use the passwd command

a. /etc/passwd

b. /etc/pwd

c. /bin/passwd

d. /passwd

65. To see the last access time of various files in a file system the command is

a. Is-Iu

b. Is-I

c. Is-acc

d. Is-mt

66. To ascertain what are the contents of the file in your the system the best way would be

a. Do a cat command on each file and find its contents

b. Use the command cat\*

c. Use the command file\*

d. None of the above

67. Which of the following is not true

a. Sorting is done on the basics of first character of each line

b. Sort command sorts a file word by word rather than line by line

c. Sort command has s provision to do a numeric sort

d. Sort is not a filter

68. To change the access time of a file to 12:40 PM on 26th Jan 1997 the command would be

a. Touch –a 2601971240 file

b. Touch –a 1240260197 file

c. Touch –a 0126124097 file

d. Touch –a 9701261240 file

69. The command cut –f 2,8 –d”:”file I would output

a. The fields 2 to 8 from file I where delimiter between fileds is:

b. The fields 2 to 8 from file I including the delimiter : between fields

c. The columns 2 to 8 from file I with : between each column

d. None of the above

70. The command to search the pattern “Hi there” in file I would be

a. Grep “Hi there” file 1

b. Grep Hi there file 1

c. Grep \<Hi there\> file1

d. Grep ‘Hi there’ file 1

71. The dmesg command  
a) Shows user login logoff attempts  
b) Shows the syslog file for info messages  
c) kernel log messages  
d) Shows the daemon log messages

72. Which command is used to set terminal IO characteristic?  
a) tty  
b) ctty  
c) ptty  
d) sty

73. Which command is used to record a user login session in a file  
a) macro  
b) read  
c) script  
d) none of the mentioned

74. Which command is used to display the operating system name  
a) os  
b) unix  
c) kernel  
d) uname

75. Which command is used to display the unix version  
a) uname -r  
b) uname -n  
c) uname -t  
d) kernel

76. Which command is used to display the octal value of the text  
a) octal  
b) text\_oct  
c) oct  
d) od

77. Which command is used to view compressed text file contents  
a) cat  
b) type  
c) zcat  
d) print

78. Which command changes a file’s group owner  
a) cgrp  
b) chgrp  
c) change  
d) group

79. Which command is used to extract intermediate result in a pipeline  
a) tee  
b) extract  
c) exec  
d) none of the mentioned

80. Which command is used to extract a column from a text file  
a) paste  
b) get  
c) cut  
d) tar

81. Which command is used to display disk consumption of a specific directory  
a) du  
b) ds  
c) dd  
d) dds

82. Which command is used to perform backup in unix?  
a) backup  
b) cpio  
c) zip  
d) gzip

83. Which command creates an empty file if file does not exist?  
a) cat  
b) touch  
c) ed  
d) read

84. Which option of rm command is used to remove a directory with all its subdirectories  
a) –b  
b) –o  
c) –p  
d) –r

85. Which command is used to identify file type?  
a) Type  
b) File  
c) Finfo  
d) Info

86.What command is used to count the total number of lines, words, and characters contained in a file?

1. Countw
2. Wcount
3. Wc
4. count p

87.What command is used to remove files?

1. dm
2. rm
3. delete
4. erase

88.How can you add Amit, a new user, to your system?

1. Using useradd
2. Using adduser
3. Using linuxconf
4. All of the above

89.In which directory can you store system user default files used for creating user directories?

1. /usr/tmp
2. /etc/default
3. /etc/skel
4. /etc/users

90.What command do you use to create Linux file systems?

1. fdisk
2. mkfs
3. fsck
4. mount

91.Which of the following is not a communication command?

1. grep
2. mail
3. mesg
4. write

92.What command is used to display the characteristics of a process?

1. au
2. ps
3. du
4. pid

93.What command is used with vi editor to replace text from cursor to right

1. S
2. s
3. R
4. r

94.What sign is used to back up over typing errors in vi?

1. !
2. $
3. #
4. @

95.What sign is used to erase or kill an entire line you have typed and start you are on a new line (but not display a new prompt)?

1. !
2. $
3. #
4. @

96.What command is used to sort the lines of data in a file in alphabetical order?

1. sort - r
2. st
3. sh
4. sort

97.What command is used with vi editor to save file and remain in the editing mode?

1. x
2. q!
3. :w
4. :q

98.What command is used with vi editor to move back to the beginning of a word?

1. w
2. e
3. a
4. b

99.Which of the following command is used to access an SMB share on a Linux system?

1. NFS
2. SMD
3. smbclient
4. smbserver

100.Which of the following command is used to see the services running in NFS server?

1. rpcinfo
2. serverinfo
3. NFSinfo
4. infserv